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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,335	04/01/2004	Richard W. Citta	P01.0447-02	7549

26574 7590 01/20/2011

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EXAMINER	
SINGH, HIRDEPAL	
ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
01/20/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,335	CITTA ET AL.	
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-62 and 64-84* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-62,64-70,73-77 and 79-83* is/are rejected.

7)☒ Claim(s) *71,72,78 and 84* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on November 01, 2010. Claims 60-62 and 64-84 are pending and have been considered below.

Response to Arguments

2. Applicant's arguments with respect to claims 60-62 and 64-84 have been considered but are moot in view of the new ground(s) of rejection.

3. Applicant argues that "...Khayrallah fails to disclose decoding a code vector such that the decoding includes deriving a set of received signal values corresponding to the code vector, and generating a reliability factor based upon a difference between at least two of the received signal values such that the reliability factor is a measure of reliability of the decoding...this error term is unrelated to decoding reliability ". This is incorrect, the primary reference Khayrallah discloses generating an error term that is used in updating the propagation characterization (abstract; column 7, lines 50-54) and is basis of updating/equalization in sequence estimator 54 in figure 3 (as similar to present invention figure 3 {reliability factor is fed back to equalizer 24 through controller}). Further, Applicant describes secondary reference Brink in his own words, and describes that Brink calculates reliability factor (remarks page 13), but argues that "Brink fails to disclose that a reliability value is based upon a difference between at least two received signal values". The applicant's position is wrong, first the primary reference describes the received signal with at least two or more values (representing received signal values in column 8, lines 51-53; and then using received signal values and

detected symbols for channel tap updating in column 9, lines 3-6), and also secondary reference Brink describes calculating reliability factor and further it is clear that in Brink there is not only one received signal value, but the received signal has N bits (bit symbols, see column 2, lines 24-25 and lines 62-63) and the received symbols (column 3, lines 9-10) are basis for reliability factor. Further applicant is trying to suggest what terminology should Brink have used, which doesn't make any sense and beyond the scope of patentability of present invention.

4. Applicant describes the secondary reference Chung in his own wording, and describes a log likelihood ratio with reference to (international Journal of Communications, issue 1) of 2008 that is way after the priority date of the present application and the prior art, and further the Chung reference for instance describes the reliability measure may be log likelihood ratio, but doesn't say that this is the only way for calculating the reliability measure. Further as discussed above primary reference Khayrallah describe received signal with at least two or more values, and Chung describes the reliability measure is generated from the decoder as shown in figures 2 and 4 (as argued by applicant that his reliability is measure of decoding) and the reliability describes whether the decoded signal is reliable i.e. error free.

5. The argument that Goose and Weng fails to discloses a reliability factor measure of decoding is incorrect, first the applicant only argues about stopping rule 70 but, the stopping rule 72 in Goose monitors change in re-encoded sequence that is decoded by the decoder 56 in figure 5 and is used for error correction.

6. Further in regard to applicant's argument for claims 73 and 79 that Goose and Xu fail to disclose a reliability factor measure of decoding, examiner disagrees becaulse as discussed above Goose describes calculating a reliability based on decoded and re-encodes signal, Specifically Goose monitors change in re-encoded sequence that is decoded by the decoder 56 in figure 5 and is used for error correction.

7. From the above it is clear that the prior art disclose the claimed feature, therefore, the rejection is upheld.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 60-62 and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah et al. (US 6,320,919) in view of Brink (US 6,353,911).

Regarding claim 60:

Khayrallah discloses a method and system for decoding data comprising;

receiving a signal containing an encoded signal at transmitter (abstract; column 4, lines 38-45).

Khayrallah discloses keeping track the values of the received signal/symbol (column 17, lines 14-35; figure 6);

Khayrallah discloses generating a reliability or quality or error signal by re-encoding the decoded signal (column 7, lines 3-12, and lines 57-64).

Although Khayrallah discloses receiving a signal but doesn't explicitly describe received signal contains a code vector, and the confidence level (column 10, lines 5-8 and lines 26-30) is a reliability factor as a measure of reliability of the decoding.

However, it is inherent that the encoded signal received at the receiver is in the form of code vector i.e. the signal may be in the form of 8 bit or 16 bit code for example.

Brink, in the same field of endeavor discloses a system and method for iterative demapping where the system has in the receiver a reliability value/factor generated based on two received signal values (as clearly seen from figure s 1-2; abstract) that is representing the decoded signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the teachings of Brink in Khayrallah to get the reliability factor based on the decoding in order to check the performance of the system related to the in coming signal whether the system is performing the required operation to get back the information reliably while keeping the cost and complexity under control.

Regarding claim 61:

Khayrallah discloses all of the subject matter as described above and further discloses that the equalizer/estimator is controlled in accordance with the re-encoded data fed back to the equalizer through characterization estimator 32 (figure 3; column 8, lines 1-40).

Regarding claim 62:

Khayrallah discloses all of the subject matter as described above and further discloses that the one of the values of the signal is largest (column 13, lines 19-26).

Regarding claim 64:

Khayrallah discloses all of the subject matter as described above and further discloses that the reliable factor/signal or error signal or control signal is generated by using a parameter associated with signal to noise ratio and the coefficient of tap values, where one of the coefficient of tap values is largest (column 13, lines 1-26), but doesn't explicitly disclose that the reliable signal/factor is based on the difference between a largest and next to largest value of received signal. However, the reliability factor/signal or error signal generated is based on different parameters such as coefficients of tap values and signal to noise ratio including the largest value as discussed above. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor based on the difference between largest and next to largest value in the received signal. One would have been motivated to use the largest and next to largest values to generate the reliability signal/factor to get the decoded data in the same form as it was before the encoding.

Regarding claim 65:

Khayrallah discloses all of the subject matter as described above and further discloses that the equalizer/estimator is controlled according to the reliability or error signal generated by using the decoded, encoded signal values (figure 3; column 8, lines 19-40; column 15, lines 36-50).

10. Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah et al. (US 6,320,919) in view of Chung et al. (US 6,799,294).

Regarding claim 60:

Khayrallah discloses a method and system for decoding data comprising;

receiving a signal containing an encoded signal at transmitter (abstract; column 4, lines 38-45).

Khayrallah discloses keeping track the values of the received signal/symbol (column 17, lines 14-35; figure 6);

Khayrallah discloses generating a reliability or quality or error signal by re-encoding the decoded signal (column 7, lines 3-12, and lines 57-64).

Although Khayrallah discloses receiving a signal but doesn't explicitly describe received signal contains a code vector, and the confidence level (column 10, lines 5-8 and lines 26-30) is a reliability factor as a measure of reliability of the decoding.

However, it is inherent that the encoded signal received at the receiver is in the form of code vector i.e. the signal may be in the form of 8 bit or 16 bit code for example.

Chung, in the same field of endeavor discloses a system and method for iterative demapping where the system has in the receiver a reliability value/factor generated based on the decoded signal (column 2, lines 55-60; figure 2 and 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the teachings of Chung in Khayrallah to get the channel error flags in the decoders with reliability values based on the decoding in order to

improve the performance of the system by avoiding the mismatch problem of block based coding.

11. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Weng (US 6,381,726).

Regarding claim 66:

Gosse discloses a method and system for decoding a received signal:

receiving a signal containing a code vector (column 2, lines 8-26, reduced state sequence estimation with vector indexes of received signal symbols is described and further improvement of using the same with reliable feedback decisions is described);

decoding the code vector (column 3, lines 1-12), wherein the decoding includes deriving a set (column 3, line 65- column 4, line 6; in the receiver the received signal is partitioned in sets or subsets and the size of set and number are described) of received signal values corresponding to the code vector.

Gosse discloses all of the subject matter as described above and further discloses a reliability factor as a measure of reliability of the decoding (70 and 72 in figure 5, the stopping rules; column 7, lines 20-25 control convergence and selective re-equalization based on the decision is checking the reliability), except for specifically teaching that generating reliability factor based upon at least one of received signal values comprise generating reliability factor based on comparison of the one received signal value to a threshold.

Weng in the same field of endeavor discloses a receiving system and method for soft decision decoding where generating reliability factor (abstract {reliability measure of decoding}) based upon at least one of received signal values comprise generating reliability factor based on comparison of the one received signal value to a threshold (column 3, lines 12-18; figure 3; column 3, lines 44-48 {code word and associated reliability (column 2, lines 65-67) i.e. associated with input is compared to threshold for a unique or final reliability generation}).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Weng in Gosse to generate a reliability factor based on received signal values to make the system better implemented with less hardware and decoding correct the errors in the communication.

12. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Weng (US 6,381,726) as applied to claim 66 above, and further in view of Khayrallah et al. (US 6,320,919).

Regarding claim 67:

Gosse discloses all of the subject matter as described above except for specifically teaching that the received signal value is largest one of received signal values.

Khayrallah in the same field of endeavor discloses a method and receiver for data detection where the received signal value is largest one of received signal values (column 13, lines 19-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to generate a reliable signal/factor if the compared received signal value is greater than the threshold to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit to make an improved equalizer system for better reception.

13. Claims 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Weng (US 6,381,726) as applied to claim 66 above, and further in view of Webster et al. (US 2001/0036223).

Regarding claim 68:

Gosse discloses all of the subject matter as described above except for specifically teaching that generating reliability factor based on a comparison of the one received signal value to a threshold comprising generating reliability factor only if the one received signal value is greater than the threshold.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where a reliability factor (paragraph 0018, and that decision is used to control receiver DFE for interference cancellation; figures 7 and 10) based upon received signal values (paragraph 0062, the values to update taps are stored in a look up table, and the values are corresponding to sets of received code words, paragraph 0019) a reliability based on a comparison of the one received signal value to a threshold (claim 6 points out the Walsh transform is generated by comparing

received signal to a predetermined code, that is used for decision for reliability; paragraph 0066).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Webster to generate a reliability factor based on comparison of received signal values with a threshold in the Gosse as taught in the Walsh structure of Webster to make a decision only if the received signal value is greater than threshold for the reliability of the received signal in the system to make an improved equalizer system in the detector to advantageously have better reception with less complexity with optimized signal to noise ratio and lower propagation errors in the decision feedback equalizer.

Regarding claim 69:

Gosse discloses all of the subject matter as described above except for specifically teaching the generated reliability signal/factor is dependent on the magnitude of one received signal value.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where the generated reliability signal/factor is dependent on the magnitude of one received signal value (paragraph 0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to generate a reliable signal/factor if the compared received signal value is greater than the threshold to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit to make an improved equalizer system for better reception.

Regarding claim 70:

Gosse discloses all of the subject matter as described above except for specifically teaching that the received signal values are provided to correlation estimator for estimating interference.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where the generated reliability signal/factor is dependent on the magnitude of one received signal value (paragraph 0020 and 0043).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to generate a reliable signal/factor if the compared received signal value is greater than the threshold to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit to make an improved equalizer system for better reception.

14. Claims 73 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Xu (US 6,393,075).

Regarding claims 73 and 79:

Gosse discloses a method and system for decoding a received signal:

receiving a signal containing a code vector (column 2, lines 8-26, reduced state sequence estimation with vector indexes of received signal symbols is described and further improvement of using the same with reliable feedback decisions is described);

decoding the code vector (column 3, lines 1-12), wherein the decoding includes deriving a set (column 3, line 65- column 4, line 6; in the receiver the received signal is partitioned in sets or subsets and the size of set and number are described) of received signal values corresponding to the code vector.

Gosse discloses all of the subject matter as described above and further discloses a reliability factor as a measure of reliability of the decoding (70 and 72 in figure 5, the stopping rules; column 7, lines 20-25 control convergence and selective re-equalization based on the decision is checking the reliability), except for specifically teaching that decoding include correlating received code vector with plurality of reference code vectors to produce values corresponding to reference codes, and values correspond to and amount of correlation between received and reference code vectors.

Xu in the same field of endeavor discloses a system and method for channel decoding where decoding include correlating received code vector with plurality of reference code vectors (column 3, lines 4-10 {correlating the known/reference info to the data received}) to produce values corresponding to reference codes, and values correspond to and amount of correlation between received and reference code vectors (column 9, lines 1-10).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the teachings of Xu in Gosse to get the reliability factor based on the decoding in order to check the performance of the system related to the in coming signal whether the system is performing the required operation to get back the

information reliably, by using a code vector at the receiver to use the same decoding technique as use at the transmitter to encode the signal.

15. Claims 75, 77, 81 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Xu (US 6,393,075) as applied to claims 73 and 79 above, and further in view of Webster et al. (US 2001/0036223).

Regarding claim 75:

Gosse discloses all of the subject matter as described above except for specifically teaching the reliability is generated from the difference between two of received signal values.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where a reliability factor (paragraph 0018 a decision based the correlated output (i.e. a Walsh transform paragraph 0021) and that decision is used to control receiver DFE for interference cancellation; figures 7 and 10) based upon a difference between at least two of the received signal values (paragraph 0062, the values to update taps are stored in a look up table, and the values are corresponding to sets of received code words, paragraph 0019).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Webster to generate a reliability factor based on received signal values in the Gosse as in the Walsh structure of Webster to make a decision for the reliability of the received signal in the system to make an improved equalizer system in the detector to advantageously have better reception with less

complexity with optimized signal to noise ratio and lower propagation errors in the decision feedback equalizer.

Regarding claim 77:

Gosse discloses all of the subject matter as described above except for specifically teaching generating reliability based on a comparison of the one received signal value to a threshold.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where a reliability factor based upon received signal values (paragraphs 0018 and 0062, the values to update taps are stored in a look up table, and the values are corresponding to sets of received code words, paragraph 0019) a reliability based on a comparison of the one received signal value to a threshold (claim 6 points out the Walsh transform is generated by comparing received signal to a predetermined code, that is used for decision for reliability; paragraph 0066).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Webster to generate a reliability factor (as shown by Iwamatsu, abstract; 21 in figure 6 and figure 7; the correlation value of Walsh transform is used as a reliability factor) based on received signal values in the Gosse as in the Walsh structure of Webster to make a decision for the reliability of the received signal in the system to make an improved equalizer system in the detector to advantageously have better reception with less complexity with optimized signal to noise ratio and lower propagation errors in the decision feedback equalizer.

Regarding claim 81:

Gosse discloses all of the subject matter as described above except for specifically teaching that generating reliability factor based on difference between two of the values.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where a reliability factor (paragraph 0018, a decision for reliability based on the correlated output (i.e. a Walsh transform paragraph 0021) and that decision is used to control receiver DFE for interference cancellation; figures 7 and 10) based upon a difference between two of the received signal values (paragraph 0062, the values to update taps are stored in a look up table, and the values are corresponding to sets of received code words, paragraph 0019).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Webster to generate a reliability factor based on received signal values in the Gosse as in the Walsh structure of Webster to make a decision for the reliability of the received signal in the system to make an improved equalizer system in the detector to advantageously have better reception with less complexity with optimized signal to noise ratio and lower propagation errors in the decision feedback equalizer.

Regarding claim 83:

Gosse discloses all of the subject matter as described above except for specifically teaching that generating reliability factor based on a comparison of the one received signal value to a threshold.

Webster in the same field of endeavor discloses a receiving system and method with embedded decision feedback equalizer where a reliability factor (paragraph 0018, and that decision is used to control receiver DFE for interference cancellation; figures 7 and 10) based upon received signal values (paragraph 0062, the values to update taps are stored in a look up table, and the values are corresponding to sets of received code words, paragraph 0019) a reliability based on a comparison of the one received signal value to a threshold (claim 6 points out the Walsh transform is generated by comparing received signal to a predetermined code, that is used for decision for reliability; paragraph 0066).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use teachings of Webster to generate a reliability factor based on received signal values in the Gosse as in the Walsh structure of Webster to make a decision for the reliability of the received signal in the system to make an improved equalizer system in the detector to advantageously have better reception with less complexity with optimized signal to noise ratio and lower propagation errors in the decision feedback equalizer.

16. Claims 74, 76, 80 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosse et al. (US 6,690,723) in view of Xu (US 6,393,075) as applied to claims 73 and 79 above, and further in view of Khayrallah et al. (US 6,320,919).

Regarding claims 74 and 80:

Gosse discloses all of the subject matter as described above except for specifically teaching that the received signal value is largest one of received signal values.

Khayrallah in the same field of endeavor discloses a method and receiver for data detection where the received signal value is largest one of received signal values (column 13, lines 19-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to generate a reliable signal/factor if the compared received signal value is greater than the threshold to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit to make an improved equalizer system for better reception.

Regarding claims 76 and 82:

Gosse discloses all of the subject matter as described above except for specifically teaching the reliability factor is generated is based on the difference between square of largest and next to largest values of received signal.

Khayrallah in the same field of endeavor discloses a method and receiver for data detection where the reliable factor is generated is based on the difference between square of largest and next to largest values of received signal (column 13, lines 1-26).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor based on different parameters such as coefficients of tap values and signal to noise ratio including the square of largest value and based on the difference between square of largest and next

to largest value in the received signal to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit to make an improved equalizer system for better reception.

Allowable Subject Matter

17. Claims 71-72, 78 and 84 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record discloses a system and method for receiving a signal containing a code vector the system decodes and get a reliability of the received signal and detects the received decoded signal, but prior art of record fails to disclose that in generating of a reliability factor based upon a difference between at least two of the received signal values comprises generating a reliability factor based upon a difference between a square of a largest and a square of a next largest of the received signal values.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is (571) 270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611